HATFD1035

Print Pascal's Triangle

Write a program to generate and print the first `n` rows of Pascal's triangle without using built-in math or array functions. For `n = 5`, the output should be:

```
    1
   1 1
  1 2 1
1 3 3 1
1 4 6 4 1
```

Program code:

```
formuls() {
   num=$1
   fact=1
   for (( i=1; i<=num; i++ ))
   do
      fact=$(( fact * i ))
   done
   echo $fact
}
combination() {
   n=$1
   k=$2
   num=$(formuls $n)
   den1=$(formuls $k)
   den2=$(formuls $((n - k)))
   echo $(( num / (den1 * den2) ))
}
pascalstriangle() {
   rows=$1
   for (( i=0; i<rows; i++ ))
   do
   for ((j=i;j<rows-1; j++))
   do
      printf " "
   done
      for (( j=0; j<=i; j++ ))
      do
         printf "%d " "$(combination $i $j)"
      done
      echo
   done
}
read -p "" n
pascalstriangle $n
```

Three sample inputs :

N=4

```
anant@MINE MINGW64 ~/pictures
$ ./main.sh
4
   1
  1 1
 1 2 1
1 3 3 1
```

N=5

```
anant@MINE MINGW64 ~/pictures
$ ./main.sh
5
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

N=10

```
anant@MINE MINGW64 ~/pictures
$ ./main.sh
10
         1
        1 1
       1 2 1
      1 3 3 1
     1 4 6 4 1
    1 5 10 10 5 1
   1 6 15 20 15 6 1
  1 7 21 35 35 21 7 1
 1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
```